

<b>Office Action Summary</b>	<b>Application No.</b> 10/591,196	<b>Applicant(s)</b> SHINBO ET AL.	
	<b>Examiner</b> MICHAEL LAPAGE	<b>Art Unit</b> 2886	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 15-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                                  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>30 August 2006</u> . | 6) <input checked="" type="checkbox"/> Other: <u>09 February 2009</u> .                            |

### **DETAILED ACTION**

1. Claims 15-30 are presented for examination in preliminary amendment filled 08/30/2006.
2. Claims 1-14 were cancelled in preliminary amendment filled 08/30/2006.

### ***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. **Claims 15, 17-23, 25-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang (U.S. PGPub No. 2008/0163688 A1).**

As to claims 15 and 23 and 29, Wang discloses and shows in figure 7 a substance adsorption detection method comprising:  
providing an optical waveguide path (28''') on a crystal oscillator (1''') which further comprises a crystal and electrodes (2 and 3) formed on either side of said crystal ([094]; [0107]; [0111]; [0113]; where as disclosed the embodiment of figure 7 is functionally equivalent to that of figure 3 with the addition of waveguide 28'''); and

measuring an oscillation characteristic (i.e. by detector 13 of Figure 3) of said crystal oscillator and of light transmitted on said optical waveguide path ([0094], lines 6-7; [0113]).

As to claims 17 and 25, Wang discloses a substance adsorption detection method, wherein one of said electrodes is an optical waveguide electrode made of an electrically conductive transparent material having a higher refractive index than a refractive index of said crystal, said optical waveguide electrode serving as said optical waveguide path ([0161]-[0162]).

As to claims 18 and 26, Wang disclose and shows in figure 3 where a substance adsorption detection method, wherein an interior of said crystal oscillator serves as an optical waveguide path (i.e. as explicitly shown in figure 3 light is guided through crystal oscillator 1).

As to claims 19 and 27, Wang discloses and shows in figure 7 where a substance adsorption detection method, wherein a metallic film is formed on said optical waveguide path ([0121]).

As to claim 20, Wang discloses a substance adsorption detection method comprising:

measuring a propagation characteristic of a surface acoustic wave in a surface acoustic wave element (1'''), and of light guided through an optical waveguide path (28''') provided in or on said surface acoustic wave element.

As to claim 21, Wang discloses and shows in figure 7 a substance adsorption detection method comprising:

forming a metallic colloid layer (2) on at least one of a crystal oscillator and a surface acoustic wave element ([0058]; [0113]; [0141]; [0142], lines 18-20).;

measuring an adsorbed mass (i.e. binding reactions) with at least one of said crystal oscillator and said surface acoustic wave element ([0026]; [0095]; [0113]; [0156], where as is commonly known in the art SPR is done by measuring the change in index of refraction from the absorption of sample on the metal layer); and

measuring an optical characteristic of said metallic colloid layer ([0129], [0130]; where inherently SPR is a measurement of surface plasmon waves present from absorption of a material on a metal layer as disclosed in Wang).

As to claims 22 and 30, Wang discloses and shows in figure 7 a substance adsorption detection method according, wherein a sensitive material layer (i.e. electrode 2) whose optical characteristic is changed by substance adsorption is provided ([0142], lines 18-22; [0156], [0158]; where inherently a SPR measurement is a measurement of the evanescent wave as disclosed which is an optical characteristic change caused by the absorption of the binding reactions.

As to claim 28, Wang discloses a sensor which measures a propagation characteristic of a surface acoustic wave in a surface acoustic wave element, and light guided through an interior of said surface acoustic wave element path ([0058]; [0094], lines 6-7; [0113]; where as disclosed the quartz crystal can be exchanged with a surface acoustic wave element which as shown explicitly in figure 3 would guide light).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**7. Claims 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. in view of Kuroda et al. (U.S. Patent No. 6,408,123 B1).**

As to claims 16 and 24, Wang does not explicitly disclose a substance adsorption detection method, wherein said waveguide path is an optical waveguide layer which has a core (28'''), said core being stacked on said crystal oscillator (i.e. as shown explicitly in figure 7) ([0111]).

However, Kuroda does disclose and show in figure 16 and in (col. 3, lines 1-8), where a waveguide has a cladding layer which as is commonly known in the art are used to surround fiber or waveguide core in order to provide total internal reflection throughout a waveguide or fiber. One of ordinary skill in the art would recognize that a

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waveguide as shown in Wang could have a clad layer as shown in Kuroda in order to protect from additional stray unwanted radiation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wang with a Clad layer in order to provide the advantage of reduced error due to the protection from possible unwanted outside radiation.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL LAPAGE whose telephone number is (571)270-3833. The examiner can normally be reached on Monday Through Friday 7:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur Chowdhury can be reached on 571-272-2287. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael LaPage/  
Examiner, Art Unit 2886

/TARIFUR R CHOWDHURY/  
Supervisory Patent Examiner, Art Unit 2886